

CLAIMS

1. An adaptive modulation communication system that adaptively varies a modulation scheme for each transmit
5 unit, wherein a transmitting-side apparatus sets different error detecting units corresponding to bit position, and transmits data subjected to error detecting processing on a different error detecting unit basis corresponding to bit position, and a receiving-side
10 apparatus performs demodulation independently for each of the error detecting units using different demodulation patterns to obtain received data.

2. The adaptive modulation communication system according to claim 1, wherein the modulation scheme is
15 varied adaptively among M-ary modulation schemes each with a square root of the number of signal points being an integer.

3. The adaptive modulation communication system according to claim 1, wherein the modulation scheme is
20 varied adaptively among M-ary modulation schemes each with a square root of the number of signal points being not an integer.

4. The adaptive modulation communication system according to claim 3, wherein an arrangement of signal
25 points is set so that a difference between the number of signal points in the I-axis direction and the number of signal points in the Q-axis direction is small.

5. The adaptive modulation communication system according to claim 1, wherein the modulation scheme is varied adaptively among M-ary modulation schemes each using phase determination axes passing through the origin point in a signal space diagram.

6. The adaptive modulation communication system according to claim 5, wherein the M-ary modulation schemes using phase determination axes passing through the origin point in the signal space diagram are modulation schemes in which identification in an amplitude direction is performed.

7. The adaptive modulation communication system according to claim 5, wherein error correcting coding is performed collectively every a plurality of bits, and the receiving-side apparatus detects bits transmitted from the transmitting-side apparatus as effective bits by performing error detection.

8. The adaptive modulation communication system according to claim 1, wherein positions of pilot signals are set using a value half the maximum amplitude in a signal space diagram of an M-ary modulation scheme having the largest modulation level.

9. The adaptive modulation communication system according to claim 1, wherein a repeat request is performed for each of the error detecting units.

10. The adaptive modulation communication system according to claim 9, wherein the modulation scheme is

varied adaptively based on channel quality estimated from the repeat request.

11. A transmitting apparatus comprising:

means for setting different error detecting units

5 corresponding to bit position; and

means for transmitting data subjected to error detecting processing on a different error detecting unit basis corresponding to bit position.

12. A receiving apparatus comprising:

10 means for receiving data subjected to error detecting processing on a different error detecting unit basis corresponding to bit position; and

means for demodulating the data independently for each error detecting unit using different demodulation
15 patterns to obtain received data.

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